

AMENDMENTS TO THE SPECIFICATION:

Please replace the Abstract with the Substitute Abstract appended to this paper.

A Substitute Abstract is provided which is within 50-150 words.

Please replace paragraph [023] on page 3 with the following rewritten paragraph:

--In a preferred embodiment first spacer means are provided for keeping the first plate and the holding means in certain distance during treating the wafer to form a gap between the wafer and the first plate of $[[0,1]]$ 0.1 mm to 10 mm preferably $[[0,5]]$ 0.5 mm to 5 mm during treating the wafer. Such first spacer means can be gripping pins. Providing a small gap gives the advantage that only a very small amount of liquid is needed for treating the wafer.--

Please replace paragraph [024] beginning on page 3 with the following rewritten paragraph:

--In a preferred embodiment second spacer means are provided for keeping the second plate and the holding means in certain distance during treating the wafer to form a gap between the wafer and the second plate of $[[0,1]]$ 0.1 mm to 10 mm preferably $[[0,5]]$ 0.5 mm to 5 mm during treating the wafer. Such second spacer means can simultaneously be means for varying distance from the first plate to the second plate.--

Please replace paragraph [048] on page 7 with the following rewritten paragraph:

--It is preferred if the quotient of the desired ultrasonic wave length l and the mean distance d between the centers of two adjacent transducers of the array is greater than 1 ($l/d > 1$). In other words - the mean distance d of the centers of adjacent transducers of the array is preferably not greater than the wavelength ($l > d$). Advantageously distance d is not greater than half of the desired wavelength l. If the transducer and ultrasonic generator is designed for a specific wavelength 1 MHz ($= 10^6 \text{ } \text{l/s}$) and the device for wet treatment is configured for aqueous solutions with an sound-propagation velocity of 1500 m/s the desired wavelength is [[1,5]] 1.5 mm. An advantageous mean distance d is below 2 mm, preferably below [[0,5]] 0.5 mm.--

Please replace paragraph [069] on page 9 with the following rewritten paragraph:

--The lower end of the hollow shaft 23 projects through the central opening of the first mounting plate 41 and is connected to a first plate 31 perpendicular to said hollow shaft 23. Said first plate 31 has the shape of a circular disk and the central axis A of the hollow shaft 23 goes through the center of the plate 31. The first plate 31 is part of a gripping device (spin chuck), which further comprises eccentrically movable gripping pins 35. Such pins 35 are eccentrically moved through a tooth gear (not shown) e.g. as described in US4903717, which is

hereby incorporated by reference. Alternative pin movement mechanisms are disclosed e.g. in US5788453, which is hereby incorporated by reference or US5156174, which is hereby incorporated by reference. The show embodiment comprises six pins. Alternatively only three pins can be used of which only one pin is eccentrically movable for securely chucking the wafer. If other gripping (clamping) elements are used the number can be reduced to two with one moving element. The first plate 31 is facing downward thus the pins 35 are projecting downwardly for holding the wafer W underneath the first plate 31. If the pins can be opened during rotating the gripping device (e.g. the tooth gear is agitated through a servo motor or each pin through a magnetic switch) the wafer is allowed to freely float between two fluid cushions.--

Please replace paragraph [070] on page 9 with the following rewritten paragraph:

--A second plate 32 is provided below and substantially parallel to said first plate 31. The second plate 32 has the shape of a circular disk and the central axis A of the hollow shaft 23 goes through the center of the second plate 32. Said second plate 32 is circumferentially surrounded by an annular liquid collector 10, which may also be called cup bowl or splashguard respectively. The second plate 32 is sealed against the liquid collector with an O-ring seal (not shown) or the second plate 32 is part of the liquid collector. The liquid

collector comprises an annular duct 14 for collecting liquid, which is flung off the wafer during wet treatment and the liquid is drained through an opening (not shown) near the bottom of the annular duct 14. The liquid collector further comprises an annular gas suction nozzle 12 directed inwardly above the annular duct 14 for receiving ambient gas and mist deriving from wet treatment. The inner diameter of the upper part of the liquid collector 10 is only somewhat larger than the outer diameter of the first plate 31 so that the first plate can be inserted into the liquid collector leaving a circumferential gap of [[0,2]] 0.2 - [[5,0]] 5.0 mm. The gap shall be small enough to seal the wafer against the ambient during treatment but big enough to avoid friction between the first plate 31 and the liquid collector 10 during the first plate being rotated.--

Please replace paragraph [078] beginning on page 10 with the following rewritten paragraph:

--The lifting means 45 have lowered the second mounting plate 43 together with the liquid collector 10 and the second plate 32 (Fig. 2). A wafer W is inserted to the device with close proximity (e.g. distance $d_1 = [[0,5]] \text{ } 0.5 \text{ mm}$) to the lower surface of the first plate 31 by a robot end effector (not shown). Gripping pins 35 are closed to securely hold the wafer. Second mounting plate 43 together with the liquid collector 10 and the second plate 32 are lifted (Fig. 1) until the gap G2 between the upper surface of the second plate 32 and the wafer W

has the required distance d2 ($d_2 \approx [0,2] \text{ mm} - [3,0] \text{ mm}$).
d2 is selected in dependence of the cleaning parameters such as ultrasonic wave length and intensity, fluid flow speed, spin speed of the wafer or specific sound-propagation velocity of the liquid.--

Please replace paragraph [087] on page 12 with the following rewritten paragraph:

--If vibrating elements are directly coupled to the plate 32 the necessary angle α_1 , at which the transducer shall be slanted, with respect to a desired angle α_2 , which the ultrasonic wave front shall take with the wafer, depend on sound-propagation velocity of plate 32 itself (e.g. aluminum; $c_1=6000 \text{ m/s}$) and of the treatment liquid (e.g. diluted aqueous solution; $c_2=1500 \text{ m/s}$). This correlation can be calculated as follows $\sin\alpha_1 / \sin\alpha_2 = c_1 / c_2$. Therefore for a desired angle α_2 of $12,5^\circ$ the plane of the transducer plate (or the vibrators resonator) shall be slanted by 60° . If transducer plate is slanted by 30° ultrasonic wave is directed to the wafer at an angle α' of $82,8^\circ$ ($\alpha = 7,2^\circ - 7,2^\circ$). In the example of Fig. 5 $\alpha = \alpha_1 = 12^\circ$, which leads to $\alpha_2 = 3^\circ$.--

Please replace paragraph [090] on page 13 with the following rewritten paragraph:

--Fig. 8 shows an enlarged view of a two dimensionally arranged array of 64 transducers (a matrix of transducers 81A

through 88H), which are used for one aspect of the invention. The mean distance d of the centers of two adjacent transducers is 1 mm whereas the width D of the array of the transducer is about [[7,5]] 7.5 mm.--

Please replace paragraph [095] on page 13 with the following rewritten paragraph:

--Wave length λ is a function of sound-propagation velocity c and frequency f ($\lambda = c/f$). For megasonic at e.g. f = [[1,5]] 1.5 MHz) in water at room temperature (25° C) with c = [[1,5]] 1.5 km/s the wavelength is 1 mm. For such a wavelength ($\lambda = 1$ mm), a transducer array with a distance d = 0,5 mm and a desired angle $\alpha = 30^\circ$ the phase shift $\phi = 0,25$ 0.25 (phase shift angle = 90°). For the same medium and desired angle but distance d = 1 mm a phase shift of $\phi = [[0,5]]$ 0.5 (phase shift angle = 180°) is required. However, in this case a second slanted wave front appears with an angle of $\alpha = - 30^\circ$. If such a second wave front shall be avoided distance d shall be selected not more than half of the wavelength.--